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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,554	02/04/2002	Hae-Seung Lee	RPD00085	9601

7590

05/07/2003

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EXAMINER

SOHN, SEUNG C

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/067,554

Applicant(s)

LEE, HAE-SEUNG

Examiner

Seung C. Sohn

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. **Figure 1** should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, **the reset reference voltage source in claims 1-40** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Claim Objections*

3. **Claims 17, 25 and 29** are objected to because of the following informalities:  
On claim 17, line 1, "claim 15" before "wherein" should be changed to -- claim 16 --.  
On claim 25, line 1, "A" before "image sensor" should be changed to -- An --.  
On claim 29, line 1, "claim 27" before "wherein" should be changed to -- claim 28 --.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

***4. Claims 1-40 are rejected under 35 U.S.C. 102(e) as being anticipated by Kozlowski et al. (Patent No. US 6,532,040).***

Referring to claims 1, 13 and 25, Kozlowski et al. shows in Fig. 3 the following elements of Applicant's claim:

a) a plurality of pixels (dotted box) each having an output (Vn), each pixel including: a first circuit that produces a signal proportional to incident light intensity, said first circuit being connected to supply said proportional signal to said pixel output, a select node (ROW SELECT) connected to receive a select signal for selecting said pixel from said plurality of pixels, and a reset transistor (M3) for resetting said pixel (Col. 7, lines 1-34);

b) an amplifier (50) having: a first input for receiving said outputs (Vn) of said pixels, and an output coupled to said reset transistors to provide a negative feedback signal to a selected pixel (Col. 8, lines 23-42); and

c) a reset reference voltage source (REF) connected to apply a reset reference voltage signal to said amplifier to provide a voltage reference for controlling reset of said pixels (Col. 8, lines 43-60).

**Referring to claims 2, 14 and 26,** Kozlowski et al. shows in Fig. 3 that said amplifier (50) further includes a second input (+ input) receiving said reset reference voltage signal (REF).

**Referring to claims 3, 15 and 27,** Kozlowski et al. shows in Fig. 3 that said reset transistor (M3) includes a gate and first and second terminals, said first terminal connected to receive said negative feedback signal to adjust said second terminal's voltage to a selected reset voltage (Col. 8, lines 23-42).

**Referring to claims 4, 16 and 28,** Kozlowski et al. discloses that said reset reference voltage source signal (REF) is selected to control said voltage at said second reset transistor terminal to be about  $V_T$ - $\Delta V$  below a reset voltage applied at said gate terminal of said reset transistor, where  $V_T$  is a threshold voltage that is characteristic of said reset transistor, and  $\Delta V$  is selected to maintain said reset transistor in a subthreshold region of operation during a steady state phase of pixel reset (Col. 7, lines 1-34).

**Referring to claims 5, 17 and 29,** Kozlowski et al. discloses that said selected  $\Delta V$  is greater than about one hundred millivolts (Col. 8, lines 15-22).

**Referring to claims 6, 18 and 30,** Kozlowski et al. shows in Fig. 3 that said select node (ROW SELECT) of each said pixel comprises a terminal of a row select transistor (M2) that is coupled to said first input of said amplifier (50).

**Referring to claims 7, 19 and 31,** Kozlowski et al. shows in Fig. 3 that each said pixel further comprises a source follower transistor (M1) coupled between said second terminal of said reset transistor (M3) and a terminal of said row select transistor (M2).

**Referring to claims 8, 11, 20, 23, 32 and 35,** Kozlowski et al. shows in Fig. 3 that said first circuit comprises a photocircuit.

**Referring to claims 9, 21 and 33,** Kozlowski et al. shows in Fig. 3 that said amplifier comprises a differential amplifier including a first differential amplifier input transistor connected to receive said first amplifier input and a second differential amplifier input transistor connected to receive said second amplifier input, said first and second differential amplifier input transistors connected to provide a signal to a current mirror circuit that is connected to deliver said negative feedback signal to said reset transistor first terminal.

**Referring to claims 10, 12, 22, 24, 34 and 36,** Kozlowski et al. shows in Fig. 3 that said photocircuit includes a photodiode (12) and a capacitance (Cfb).

**Referring to claims 37 and 38,** Kozlowski et al. shows in Fig. 3 that said image sensor comprises a CMOS-compatible image sensor (Col. 3, lines 54-56).

**Referring to claims 39 and 40,** Kozlowski et al. shows in Fig. 3 that said pixels comprise active pixels (Col. 1, lines 11-13).

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

**Merrill (Patent No. US 5,880,460)** discloses active pixel sensor with noise reduction circuit.

**Dhuse et al. (Patent No. US 6,438,276)** discloses an apparatus for reducing row reset noise.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seung C. Sohn whose telephone number is (703) 308-4093. The examiner can normally be reached on Monday through Friday from 8:30 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

SCS

SCS  
May 3, 2003



KEVIN PYO  
PRIMARY EXAMINER